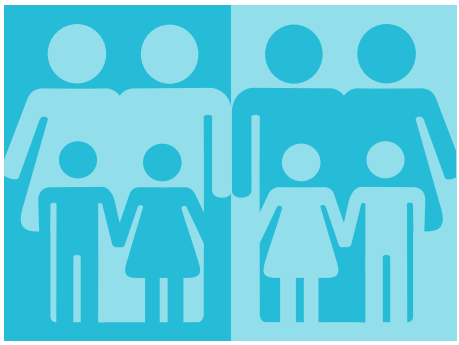
JOINT CENTER FOR POLITICAL AND ECONOMIC STUDIES

TRENDS IN CHILD HEALTH 1997-2006:

ASSESSING RACIAL/ETHNIC DISPARITIES IN DIAGNOSES OF ADHD/ADD AND OF LEARNING DISABILITY

WILHELMINA A. LEIGH, PH.D.
ANNA L. WHEATLEY

JUNE 2009



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FOREWORD

The health of children is a direct reflection and a critical measure of a nation's overall quality of life. For that reason, the persistent disparities in child health indicators across racial and ethnic lines should raise concern in every American community. Our country can do and be better than this.

Promoting greater knowledge and understanding of these disparities is a key objective of the Joint Center for Political and Economic Studies, which, with generous support from the W.K. Kellogg Foundation, has analyzed data for selected indicators on the health of children and has examined trends over time (1997-2006). These indicators—specifically, low birthweight, rated health status, unmet dental care needs, ADHD/ADD diagnosis, asthma diagnosis, learning disability diagnosis and activity limitation—provide insight into an array of factors that can influence health and quality of life throughout the lifespan.

The findings from this analysis are presented in a series of issue briefs, each of which highlights differences in health outcomes by race/ethnicity (for black, white, and Hispanic children). In this brief, racial/ethnic disparities in the diagnosis of ADHD/ADD and of learning disability are explored.

I would like to extend a special thanks to Dr. Wilhelmina Leigh of the Joint Center and her research assistant, Anna L. Wheatley. Their work, along with that of many other Joint Center staff members, has produced a series of briefs that will prove invaluable to our national policymakers as they look to improve our health care system. In particular, we hope that the information herein will help them in their efforts to craft new policies and programs that will deliver the broadest possible benefits and, at the same time, have the greatest impact on expanding hope, opportunity and improving the quality of life for all Americans.

Ralph B. Everett
President and CEO
Joint Center for Political and Economic Studies

Behavioral and learning disorders have come to be regarded as major chronic conditions affecting the development of school-aged children and adolescents. Attention-Deficit Hyperactivity Disorder/Attention Deficit Disorder (ADHD/ADD) and learning disability (LD) are two commonly diagnosed behavioral and learning conditions that frequently co-occur among children. Educators and physicians, respectively, have reported increases in the number of children with behavioral and emotional disorders and in the number of children with outpatient visits related to these disorders (Pastor and Reuben 2008).

This brief examines the rates of diagnoses of ADHD/ADD and of LD among children under the age of 18 who are African American, Hispanic or white. Differences between and similarities among the three groups of children for ADHD/ADD and LD are noted throughout the brief. Pair wise comparisons are made among the three racial/ethnic groups of children overall and between pairs of children of the various racial/ethnic groups in families with comparable sociodemographic characteristics.

BACKGROUND

ADHD/ADD is a neurobehavioral disorder characterized by either an inability to pay attention or by hyperactivity, or both. This disorder can last into adulthood, affecting numerous areas of life, including relationships with peers and family members and performance in school. In addition, some studies have demonstrated increased susceptibility to substance abuse, risk-taking and criminal behaviors among adolescents and adults who have ADHD/ADD and other behavioral disorders (Centers for Disease Control and Prevention 2005).

A learning disability, on the other hand, is not a single disorder, but includes disabilities in any of seven areas—receptive language (listening), expressive language (speaking), basic reading skills, reading comprehension, written expression, mathematics calculation and mathematical reasoning. In addition, different types of learning disabilities frequently co-occur with one another and with social skill deficits and emotional or behavioral disorders (Lyon 1996).

Unlike most other measures used to assess child health, much less is known and understood about mental/behavioral health and, consequently, about related racial/ethnic disparities (Froehlich et al. 2007; Pastor and Reuben 2008). Several factors may influence the likelihood of diagnosis of behavioral and learning conditions, including access to health care and educational services, differing practices of local health care and education professionals and parental attitudes (Pastor and Reuben 2008).

In particular, assessing the prevalence of ADHD/ADD is complex, and not without controversy. Some studies find that boys are more likely to be diagnosed with ADHD/ADD, while girls and racial/ethnic minorities are diagnosed and treated less frequently. It is not completely understood whether this is due to differential identification of behavior among certain groups, or due to a real difference in prevalence (Currie 2005). Because there is no specific test for ADHD/ADD, its diagnosis is less objective than that of other non-behavioral health conditions. In addition, the diagnosis of ADHD/ADD is based on identifying behaviors, such as high activity levels, that often are normal for children.

The term learning disability was coined in 1963 to explain and characterize students who were experiencing significant academic difficulties and developmental disorders. This characterization is somewhat complicated, however, because the definition of LD specifies that the ability-achievement discrepancy not be the result of visual, hearing or motor impairments, mental retardation, emotional disturbance or environmental, cultural or economic disadvantage (National Research Council 2002). Determining that this is so requires the ability to differentiate among causes of academic failure that may be quite nuanced and even subjective. In addition, the complexity of each of the skill domains of which LD is comprised, the overlap among the domains and the fact that disabilities in these areas may be accompanied by other disorders (such as ADHD/ADD) compromise diagnostic precision (Altarac and Saroha 2007; National Research Council 2002; Vaughn and Fuchs 2003). For example, the diagnostic criteria

for LD are as contentious as those for emotional disturbance (National Research Council 2002). As such, definitional clarity and the establishment of acceptable criteria for LD identification has been problematic. In spite (or perhaps because) of these challenges, LD has been among the largest and fastest growing categories used to determine the receipt of Special Education services.[1]

ADHD/ADD and LD have a substantial economic effect on families, the health care system and schools. For example, about half of the students enrolled in Special Education programs—the number of which has increased, along with the size of the student population receiving services—are entitled to these services because of LD (Pastor and Reuben 2008; Vaughn and Fuchs 2003). A recent national survey of special education students showed that children with ADHD are also a rapidly growing subgroup of students within special education programs.

METHODOLOGY

This brief is based on data collected for two variables from the National Health Interview Survey (NHIS). The first identifies those sample children ages two to 17 whom a doctor or health professional diagnosed as having ADD (for 1997-1999) or ADHD/ADD (for 2000-2006) (Integrated Health Interview Series n.d.).[2] The second identifies sample children ages three to 17 whom a representative from school or a health professional ever diagnosed as having a LD (Integrated Health Interview Series n.d.).

Non-Hispanic white (white) children, non-Hispanic black (black) or African American children and Hispanic children under age 18 are compared on their rates of diagnosis of ADHD/ADD and on their rates of diagnosis of LD for the years 1997 through 2006. The NHIS provides data for the major Hispanic subpopulations (Mexican American, Puerto Rican and Cuban) as well as for all Hispanic subpopulations combined. Data for Hispanic subpopulations are not used in this analysis, however, because of small sample sizes in each year between 1997 and 2006. Thus, the data analyzed for Hispanic children consider children of the various Latino subpopulations as a single group.

In each year between 1997 and 2006, comparisons of the percent of children who had ever been diagnosed with ADHD/ADD and of the percent of children who had ever been diagnosed with a LD were made first between children belonging to a pair of racial/ethnic groups as a whole. Then, the ways in which differences in sociodemographic (i.e., socioeconomic, familial and demographic) characteristics are associated with differences in the diagnosis of these two disorders were examined. This was done by comparing differences in the prevalence of ADHD/ADD and of LD for children who belonged to pairs of races/ethnicities and who were in families with characteristics corresponding to the following nine sociodemographic variables:

- Region of residence—Northeast; North Central; South; and West
- Legal marital status (of householder)—Married; or Widowed, divorced, separated, never married or unknown
- Family type—Married-couple; Single-parent
- Educational attainment (of householder/spouse)—Less than high school; High school; Some college; Bachelor's degree or higher

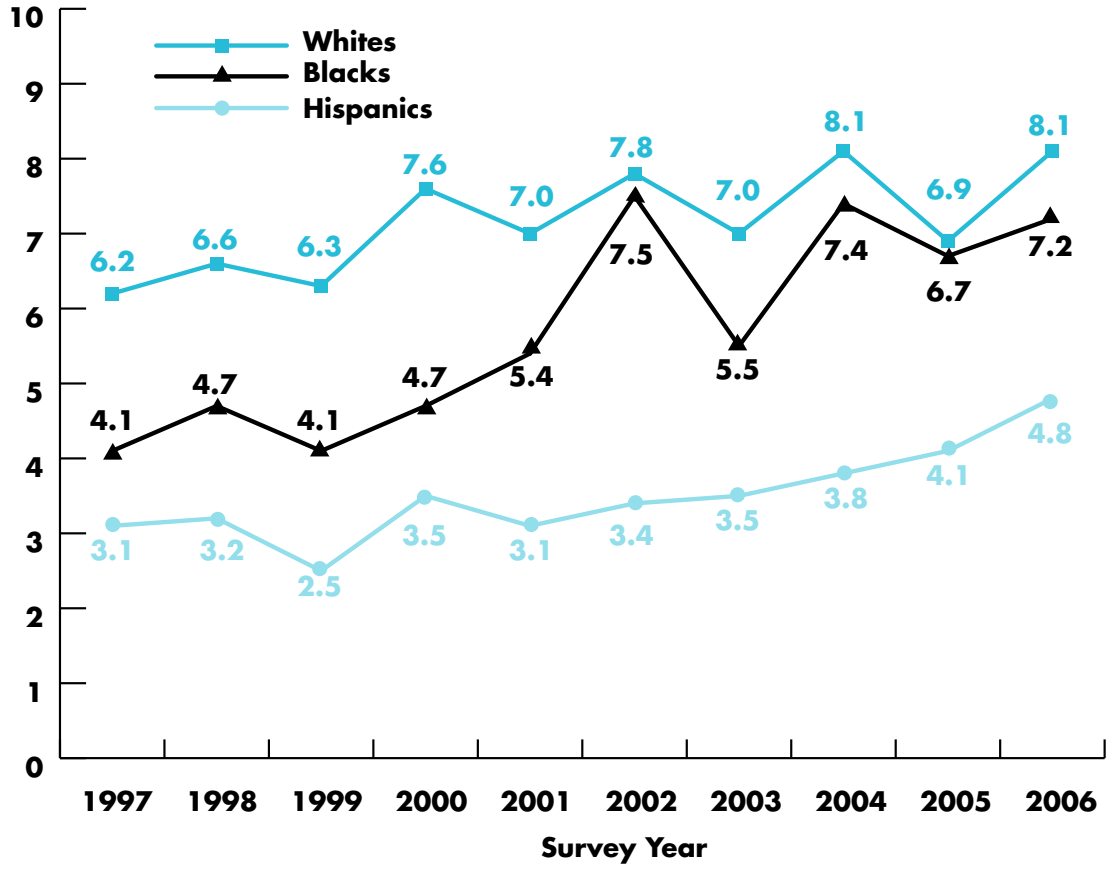
1 Under the Individuals with Disabilities Education Act (IDEA), fourteen federal terms and definitions are used to guide how states define disability and who is eligible for special education services. The following terms are included under the lead definition of a child with a disability: autism, deaf-blindness, deafness, emotional disturbance, hearing impairment, mental retardation, multiple disabilities, orthopedic impairment, other health impairment (includes ADHD/ADD), specific learning disability (i.e., LD), speech or language impairment, traumatic brain injury and visual impairment including blindness and developmental delay. (Developmental delay is an optional category that states may chose to use for children age three through nine or some subset of that age range and may also determine eligibility criteria for developmental delay) (Müller and Markowitz 2004).

2 A question about ADD diagnosis was first included in the NHIS survey in 1997. Beginning in 2000, the NHIS included both terms (ADHD and ADD), reflecting the "shift in medical terminology rather than a substantive change or broadening of the concept being measured in the variable ADDEV."

- Employment status (of household)—Zero-earner household; Single-earner household; Two-earner household
- Poverty status (of household or individual)[3]—At or above poverty threshold; Below poverty threshold
- Private health insurance coverage status (of child)—Not covered; Covered
- Medicaid coverage status (of child)—Not covered; Covered
- Health insurance coverage status (of child)—Not covered; Covered

These nine sociodemographic variables include a total of 23 categories and thus provide 23 subgroups of children for comparison.

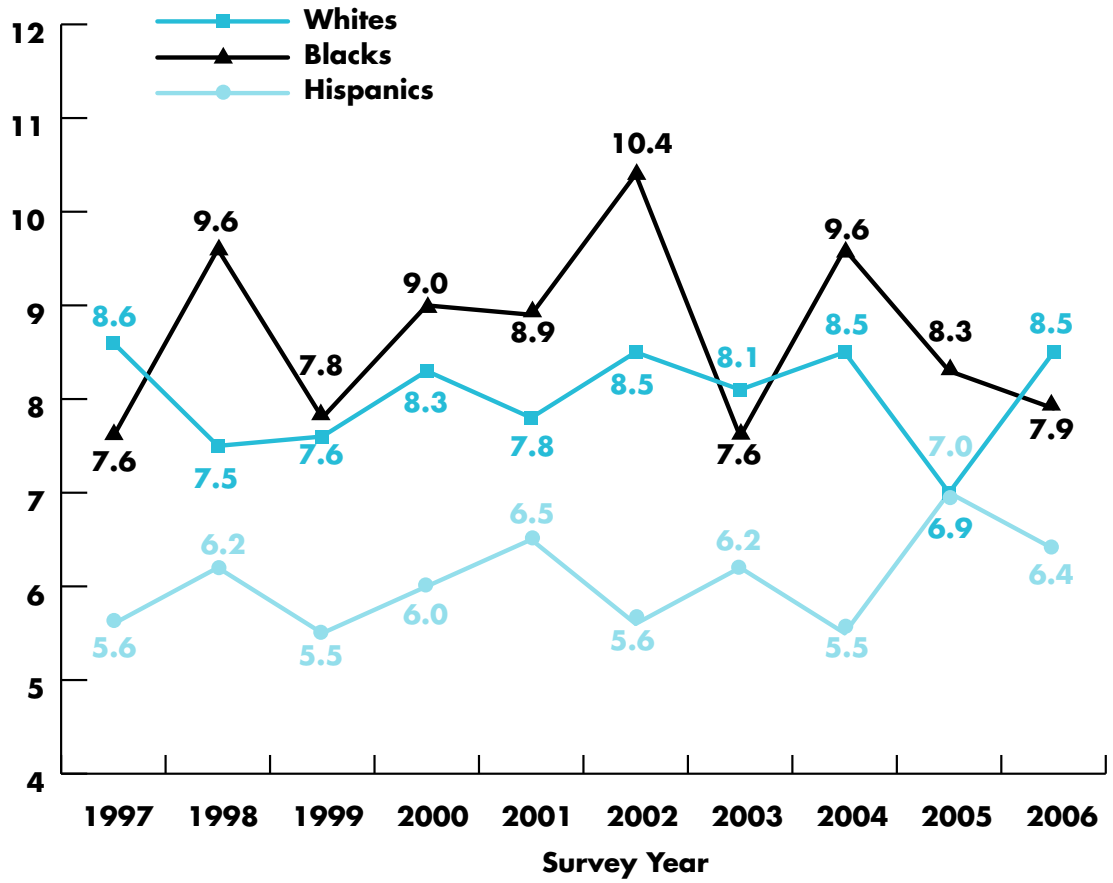
Figure 1
Children ever diagnosed with ADHD/ADD, by race/ethnicity, 1997-2006
(Percent)



Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

3 The federal poverty threshold is determined by the U.S. Census Bureau, which uses a set of "money income" thresholds that vary by family size and ages of the family members to determine who is in poverty. The official poverty thresholds are updated annually for inflation using the Consumer Price Index for All Urban Consumers (CPI-U). For example, in 2006, the poverty threshold for a family of four, including two related children under age 18, was $20,444. If a family of this composition has an income below this threshold, they are officially considered to be in poverty (U.S. Census Bureau 2008).

Figure 2
Children ever diagnosed with a learning disability, by race/ethnicity, 1997-2006 (Percent)



Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

The significance of gaps in the prevalence of ADHD/ADD and of LD between black children and white children, between Hispanic children and white children and between black children and Hispanic children was assessed using t-tests of differences of proportions with 90-percent confidence intervals.[4] The difference in the rates of these disorders among children of the various racial/ethnic groups was determined to be significant if the gap was significant in at least seven years (out of the 10 years 1997 through 2006). The term "indeterminate" is used to characterize gaps that are neither statistically significant nor statistically insignificant in a majority of years during the study period.

4 For additional information about the tests of significance conducted at both the 90-percent confidence level and the 95-percent confidence level, contact Wilhelmina Leigh at wleigh@jointcenter.org.

FINDINGS

During the study period, on average, 5.7 percent of black children and 3.6 percent of Latino children received an ADHD/ADD diagnosis, compared to 7.2 percent of white children (**Figure 1**). Hispanic children were less likely than white children to have received an ADHD/ADD diagnosis. The relationships between the overall frequencies of ADHD/ADD diagnosis for black children and white children and for black children and Latino children are indeterminate. In other words, in a majority of years these frequencies are neither different from nor equal to one another for the pairs of children.

A somewhat different pattern emerges from paired comparisons of rates of LD diagnosis. During the study period, on average, 8.7 percent of black children and 6.1 percent of Hispanic children were reported to have been diagnosed with a LD, compared to 8.0 percent of white children (**Figure 2**). Overall, black children and white children were equally likely to have been diagnosed with a LD. Hispanic children, however, were less likely than white children to have been diagnosed with a LD. The relationship between the frequencies of LD diagnosis for black children and for Hispanic children is indeterminate.

Gaps in ADHD/ADD Diagnosis by Sociodemographics

When black children and white children of four sociodemographic subgroups are compared, black children are found to be less likely than white children to have ever been diagnosed with ADHD/ADD (**Table 1**).

Table 1
Black-White Differences in ADHD/ADD Diagnosis by Sociodemographic Variables

Sociodemographic Variables	Findings
Marital status: 'widowed, divorced, separated, never married or unknown'	Black children in families in which the householder's marital status is widowed, divorced, separated, never married or unknown are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Family type: single-parent	Black children in single-parent families are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Private insurance coverage status: covered	Black children who are privately insured are less likely than white children who are privately insured to have been diagnosed with ADHD/ADD.
Medicaid coverage status: not covered	Black children who are not covered by Medicaid are less likely than white children who are not covered by Medicaid to have been diagnosed with ADHD/ADD.

Black children in families whose marital status is not married and whose family type is single-parent both are less likely than white children in the corresponding families to have been diagnosed with ADHD/ADD. In addition, black children with two types of insurance coverage—covered by private insurance and not covered by Medicaid (i.e., uninsured or covered by a type of insurance other than Medicaid)—are less likely than their white counterparts to have been diagnosed with ADHD/ADD.

Among children in a larger number of sociodemographic subgroups (12), black children and white children are equally likely to have been diagnosed with ADHD/ADD. For the rest of the within-sociodemographic-subgroup comparisons (seven of 23 subgroups), the nature of the relationship between ADHD/ADD diagnosis among black children and ADHD/ADD diagnosis among white children is indeterminate. This indeterminacy also characterizes the nature of the relationship when black children and white children overall are compared.

As is the nature of the overall Hispanic-white difference, when Hispanic children and white children in families in a majority of the sociodemographic subgroups are compared, Hispanic children are less likely than white children to have been diagnosed with ADHD/ADD (**Table 2**).

Table 2
Hispanic-White Differences in ADHD/ADD Diagnosis by Sociodemographic Variables

Sociodemographic Variables	Findings
Region of residence: South	Hispanic children who live in the South are less likely than white children who live in the South to have been diagnosed with ADHD/ADD.
Region of residence: West	Hispanic children who live in the West are less likely than white children who live in the West to have been diagnosed with ADHD/ADD.
Marital status: married	Hispanic children in families in which the householder's marital status is married are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Marital status: 'widowed, divorced, separated, never married or unknown'	Hispanic children in families in which the householder's marital status is widowed, divorced, separated, never married or unknown are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Family type: married-couple	Hispanic children in married-couple families are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Family type: single-parent	Hispanic children in single-parent families are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Educational attainment: less than high school	Hispanic children in families in which the educational attainment of the householder/spouse is less than high school are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Educational attainment: high school	Hispanic children in families in which the educational attainment of the householder/spouse is high school are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Educational attainment: some college	Hispanic children in families in which the educational attainment of the householder/spouse is some college are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Employment status: single-earner household	Hispanic children in single-earner households are less likely than white children in single-earner households to have been diagnosed with ADHD/ADD.
Employment status: two-earner household	Hispanic children in two-earner households are less likely than white children in two-earner households to have been diagnosed with ADHD/ADD.
Poverty status: at or above poverty threshold	Hispanic children in families with incomes at or above the poverty threshold are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.
Poverty status: below poverty threshold	Hispanic children in families with incomes below the poverty threshold are less likely than white children in this same type of family to have been diagnosed with ADHD/ADD.

Table 2 continued

Sociodemographic Variables	Findings
Private insurance coverage status: not covered	Hispanic children who are not privately insured are less likely than white children who are not privately insured to have been diagnosed with ADHD/ADD.
Private insurance coverage status: covered	Hispanic children who are privately insured are less likely than white children who are privately insured to have been diagnosed with ADHD/ADD.
Medicaid coverage status: not covered	Hispanic children who are not covered by Medicaid are less likely than white children who are not covered by Medicaid to have been diagnosed with ADHD/ADD.
Medicaid coverage status: covered	Hispanic children who are covered by Medicaid are less likely than white children who are covered by Medicaid to have been diagnosed with ADHD/ADD.
Any health insurance coverage status: not covered	Hispanic children who are not covered by any form of health insurance are less likely than white children who are not covered by any form of health insurance to have been diagnosed with ADHD/ADD.
Any health insurance coverage status: covered	Hispanic children who are covered by any form of health insurance are less likely than white children who are covered by any form of health insurance to have been diagnosed with ADHD/ADD.

In particular, Latino children are less likely than white children to have been diagnosed with ADHD/ADD, regardless of the following variables: marital status of householder, family type, poverty status, private health insurance coverage status, Medicaid coverage status and coverage status of any form of health insurance. This means that for both categories of each of these variables (e.g., for both married-couple families and single-parent families), Latino children are less likely that their white counterparts (in the same sociodemographic subgroups) to have been diagnosed with this condition.

The relationship between the rates of ADHD/ADD diagnosis for black children and Hispanic children, however, is indeterminate both overall and when comparing children in the majority of sociodemographic subgroups. In only two sociodemographic subgroups—both related to insurance coverage—are Hispanic children less likely than black children to have been diagnosed with ADHD/ADD. Hispanic children who are not privately insured and Hispanic children who are covered by Medicaid both are less likely than their black counterparts (with the corresponding health insurance coverage) to have been diagnosed with ADHD/ADD.

Gaps in Learning Disability Diagnosis by Sociodemographics

As with the nature of the black-white relationship overall, when black children and white children in all sociodemographic subgroups are compared, black children and white children are equally likely to have ever been diagnosed with a LD. In other words, when comparing children by race and by sociodemographic factors, significant differences are not evident between black children and white children in any of the sociodemographic subgroups included in this study.

Though Hispanic children as a group are less likely than white children as a group to have been diagnosed with a LD, Hispanic children in only six sociodemographic subgroups are also less likely than their white counterparts to have been diagnosed with this condition **(Table 3)**. In about half of the sociodemographic subgroup comparisons (12 of 23), however, the nature of the relationship between Hispanic children and white children is indeterminate. Among children in the remaining five sociodemographic subgroups, white children and Hispanic children are equally likely to have been diagnosed with a LD.

Table 3
Hispanic-White Differences in Learning Disability Diagnosis by Sociodemographic Variables

Sociodemographic Variables	Findings
Family type: married-couple	Hispanic children in married-couple families are less likely than white children in this same type of family to have been diagnosed with a learning disability.
Educational attainment: less than high school	Hispanic children in families in which the educational attainment of the householder/spouse is less than high school are less likely than white children in this same type of family to have been diagnosed with a learning disability.
Poverty status: below poverty threshold	Hispanic children in families with incomes below the poverty threshold are less likely than white children in this same type of family to have been diagnosed with a learning disability.
Private insurance coverage status: not covered	Hispanic children who are not privately insured are less likely than white children who are not privately insured to have been diagnosed with a learning disability.
Medicaid coverage status: not covered	Hispanic children who are not covered by Medicaid are less likely than white children who are not covered by Medicaid to have been diagnosed with a learning disability.
Medicaid coverage status: covered	Hispanic children who are covered by Medicaid are less likely than white children who are covered by Medicaid to have been diagnosed with a learning disability.

While the difference between the rates of LD diagnosis for Latino children and for black children is indeterminate overall, in a majority of sociodemographic subgroups these two groups of children are equally likely to have been diagnosed with a LD. Among children in only one sociodemographic subgroup—children who are not privately insured—Hispanics are less likely than blacks to have been diagnosed with a LD.

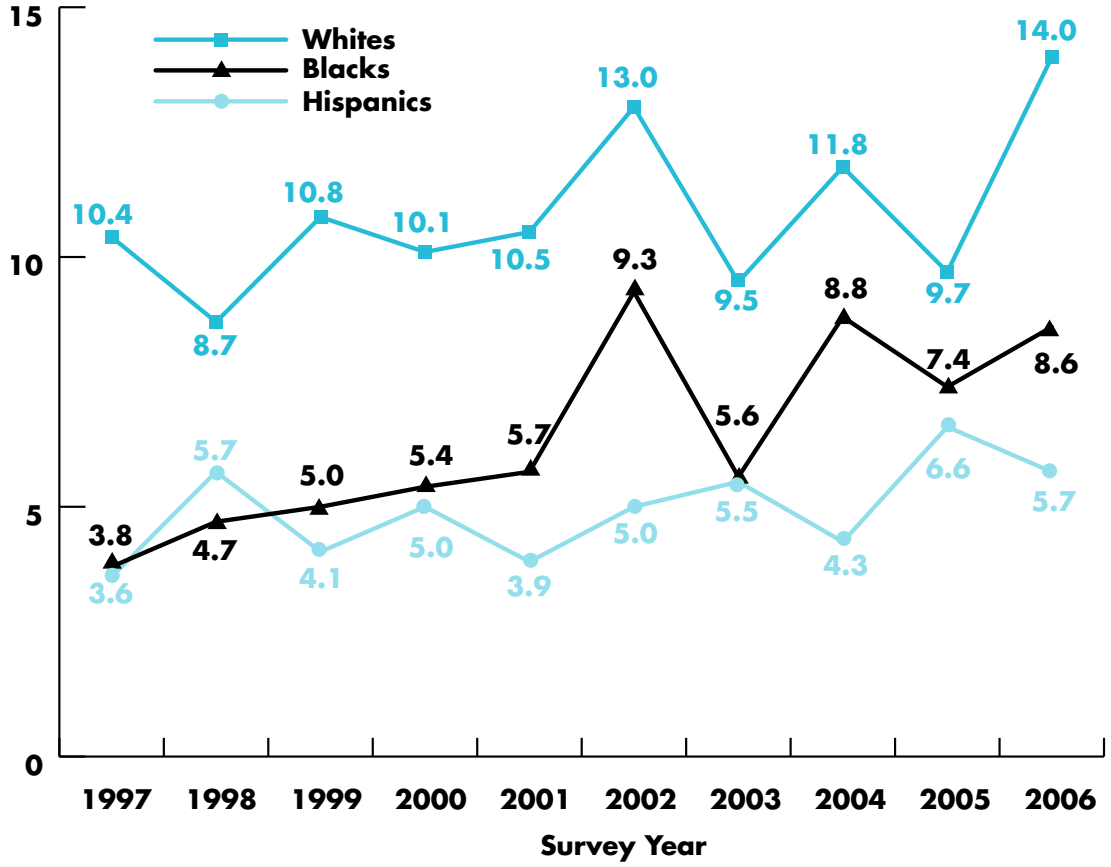
INFLUENCE OF SOCIODEMOGRAPHICS

Region of Residence

Cross tabulation of the data by race/ethnicity and by region of residence shows that this sociodemographic characteristic is associated with racial/ethnic differences in the rates of ADHD/ADD but is not associated with racial/ethnic differences in LD.

When comparisons are made by race/ethnicity and by region of residence, significant differences in the rates of ADHD/ADD diagnosis are exhibited between Hispanic children and white children who live in the South and between Hispanic children and white children who live in the West (**Table 2**). Specifically, Hispanic children who live in the South and Hispanic children who live in the West are less likely than white children who live in the South and white children who live in the West, respectively, to have been diagnosed with ADHD/ADD. Hispanic children and white children in the Northeast and in the North Central are equally likely to have been diagnosed with ADHD/ADD. Black children and white children are equally likely to have received this diagnosis in all regions except the South (where the relationship between the diagnosis rates is indeterminate). The same is true when black children and Hispanic children are compared across the four regions.

Figure 3
Children ever diagnosed with ADHD/ADD, in single-parent families, by race/ethnicity, 1997-2006
(Percent)

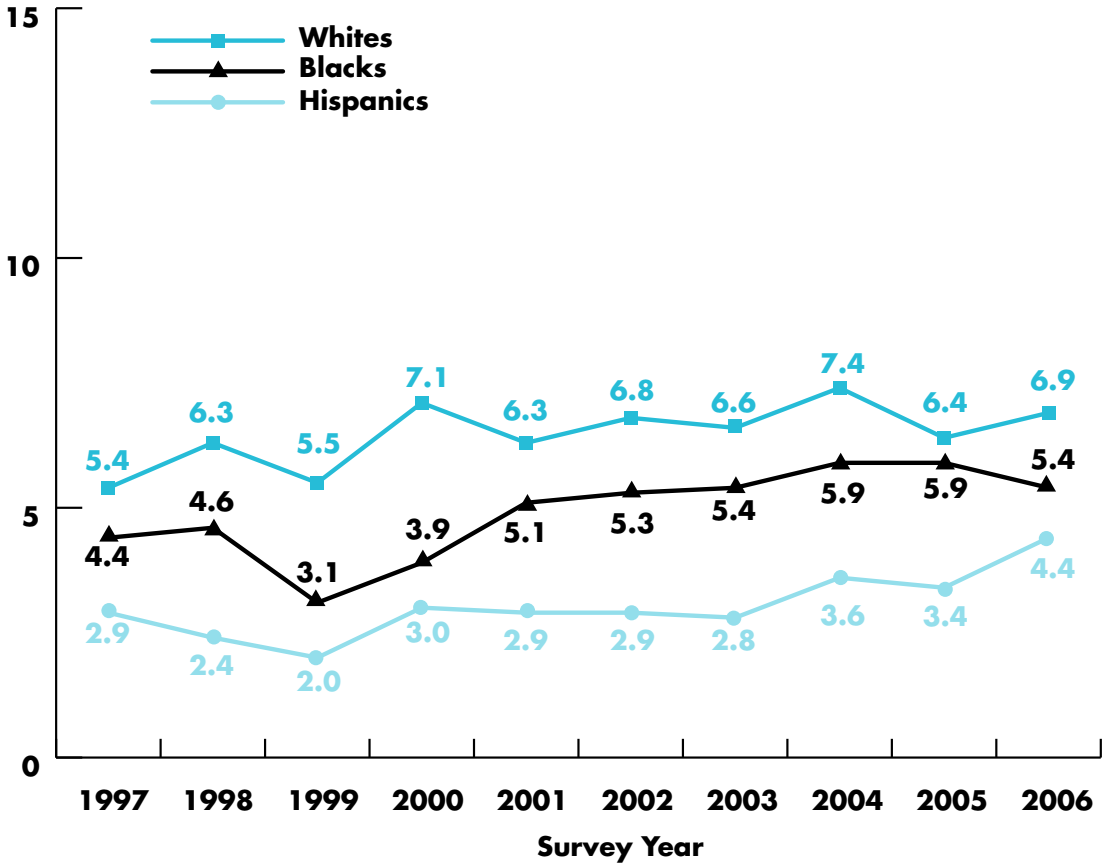


Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

Reported rates of ADHD/ADD diagnosis also vary by region for each racial/ethnic group. For example, the rate of ADHD/ADD diagnosis for white children who live in the South (8.7 percent on average during the study period) is notably higher than for white children who live in the Northeast (5.8 percent on average during the study period). In fact, the rate of ADHD/ADD diagnosis for white children in the South is the highest for children of any of the three racial/ethnic groups across all regions. Hispanic children living in the West have the lowest diagnosis rate (2.8 percent on average during the study period) for all racial/ethnic groups in all regions. Differences in the rates of ADHD/ADD diagnosis both for each racial/ethnic group and when comparing racial/ethnic groups for each region, suggest that further research is necessary to understand the ways in which region of residence may influence diagnosis of ADHD/ADD.

With respect to LD, black children and white children are equally likely to have received a diagnosis in each of the four regions. Hispanic children and black children are equally likely to have been diagnosed with LD in all regions except the South (where the relationship between the diagnosis rates is indeterminate). Hispanic children and white children are equally likely to have been diagnosed with a learning disability in the Northeast and North Central, while the nature of the relationship in the remaining two regions—the South and the West—is indeterminate.

Figure 4
Children ever diagnosed with ADHD/ADD, in married-couple families, by race/ethnicity, 1997-2006
(Percent)



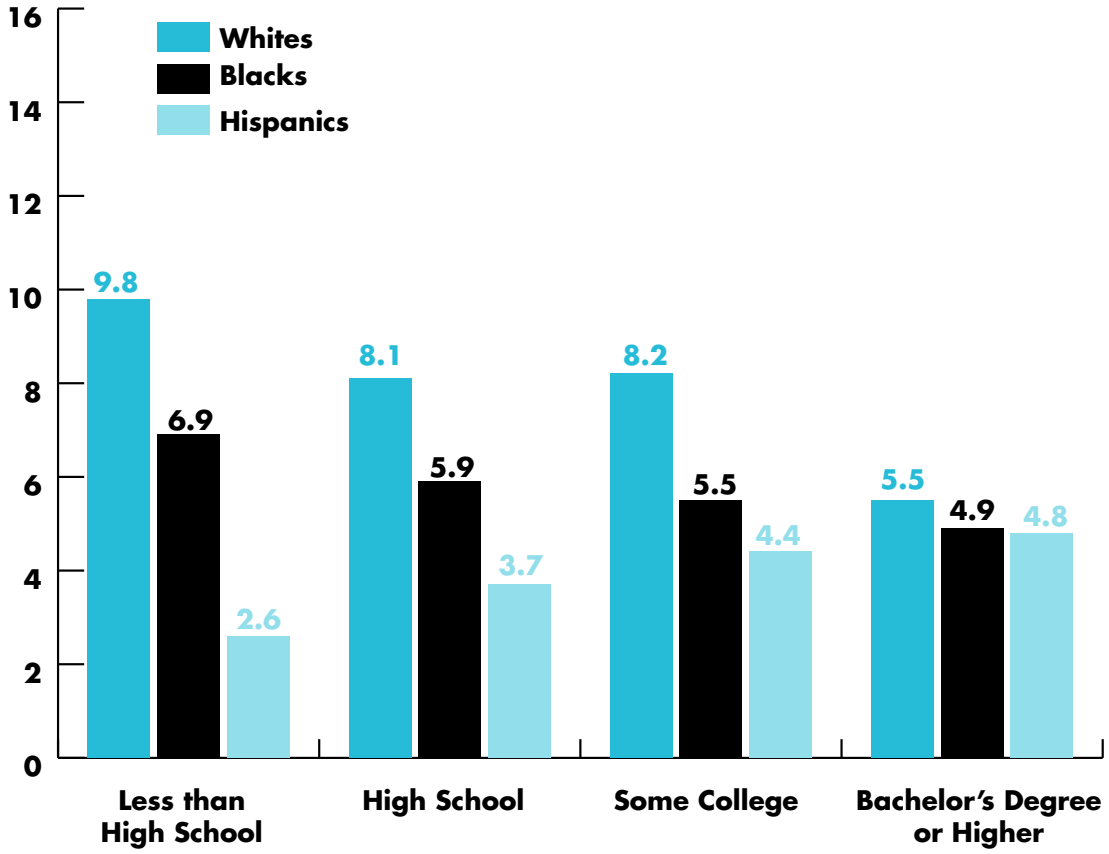
Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

Family Structure

Analysis of the disparities in ADHD/ADD diagnosis and in LD diagnosis by the two indicators of family structure—family type and marital status—shows that family structure is associated with racial/ethnic differences in ADHD/ADD diagnosis. With respect to LD diagnosis, family type (but not marital status) is associated with racial/ethnic differences in diagnosis.

When examining patterns by family type, among children in single-parent families, white children are more likely than both black children and Latino children to have received an ADHD/ADD diagnosis (**Figure 3**). Black children and Latino children in single-parent families are equally likely to have received a diagnosis of this condition. When the comparison is made among children in married-couple families, however, a significant difference no longer exists between white children and black children in the percent diagnosed with ADHD/ADD (**Figure 4**). In other words, black children and white children in married-couple

Figure 5
Children ever diagnosed with ADHD/ADD, by educational attainment of householder/spouse and by race/ethnicity, 1997-2006 average (Percent)

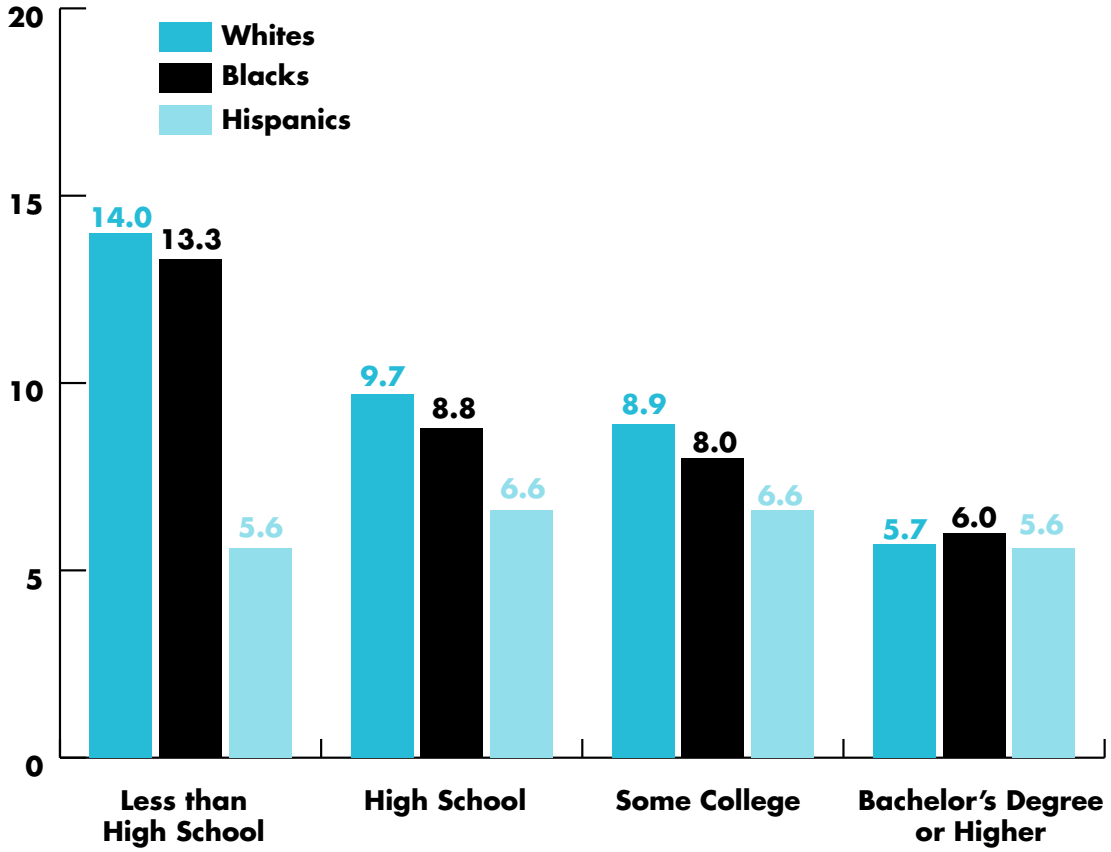


Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

families are equally likely to have been diagnosed with ADHD/ADD. When compared to Latino children in this same sociodemographic subgroup, however, white children remain more likely to have been diagnosed with ADHD/ADD. As is the case in single-parent families, black children and Hispanic children in married-couple families are equally likely to have been diagnosed with ADHD/ADD. In other words, the rates of ADHD/ADD diagnosis for black children and Hispanic children do not differ significantly, regardless of family type.

The same relationships are exhibited when racial/ethnic pairs of children are compared by marital status of the householder. In other words, the relationships described above for children in married-couple families also are exhibited among children in families in which the householder's marital status is married. The relationships described for children in single-parent families also are exhibited among children in families in which the householder's marital status is anything other than married—i.e., widowed, divorced, separated, never married or unknown.

Figure 6
Children ever diagnosed with a learning disability, by educational attainment of householder/spouse and by race/ethnicity, 1997-2006 average
(Percent)

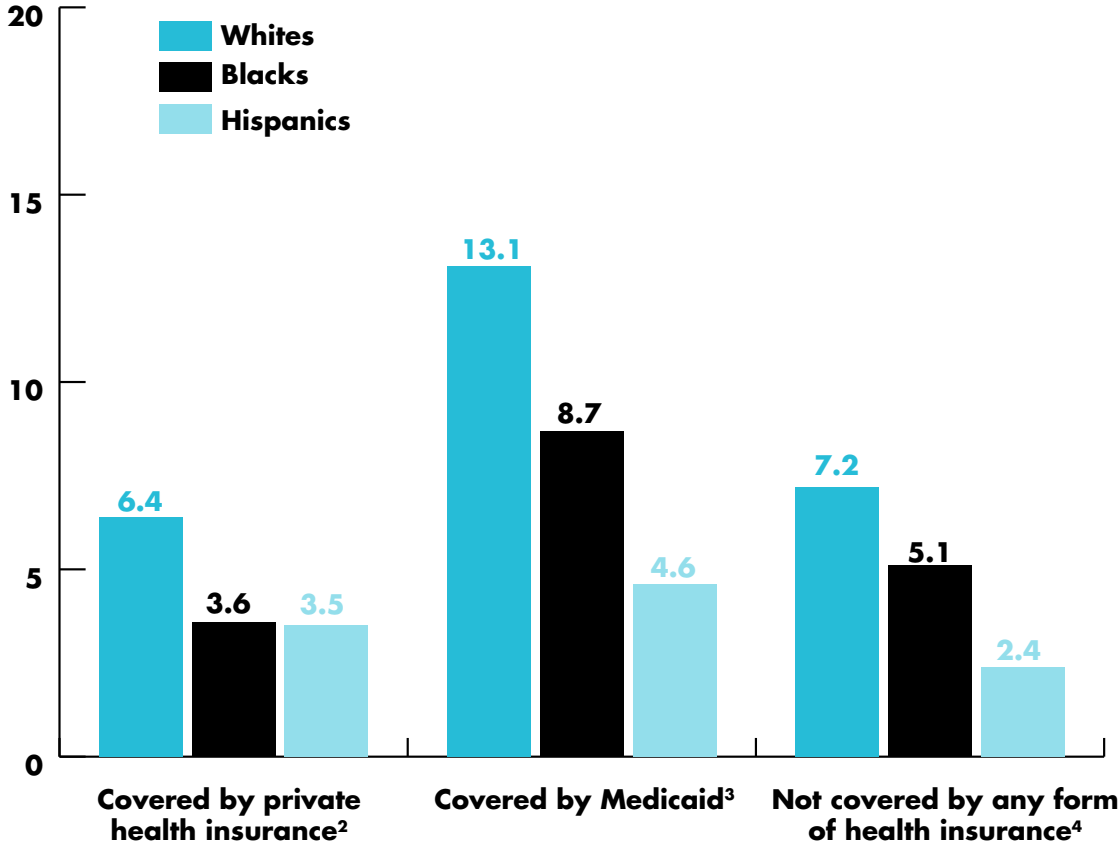


Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

Family structure is associated with only one significant racial/ethnic difference in LD. Specifically, Hispanic children in married-couple families are less likely than white children in married-couple families to have been diagnosed with a LD. This same type of relationship characterizes the nature of the Hispanic-white difference between children overall. Thus, it is unclear the role that family type plays in the difference in LD by race/ethnicity.

For each racial/ethnic group, the rates of diagnosed ADHD/ADD among children in single-parent and non-married-householder families are higher than the rates among children of the same racial/ethnic groups who live in married-couple and married-householder families. The same relationships hold for LD diagnosis. When the married and not-married subgroups are compared for the two family structure variables, racial/ethnic differences also are noted in some cases—for both family structure variables for ADHD/ADD and for the family type variable only for LD. Further research is needed to better understand the impact of family structure on rates of both ADHD/ADD diagnosis and LD diagnosis and the ways in which family structure may be associated with racial/ethnic differences in these rates.

Figure 7
Children ever diagnosed with ADHD/ADD, by health insurance coverage status and by race/ethnicity, 1997-2006 average[1]
(Percent)



1 *Data for "covered by private health insurance" and for "covered by Medicaid" are averaged for the 1997-2006 period. Data for "not covered by any form of health insurance" are averaged for the 1998-2007 period.*

2 *Data are from variable defined as "covered by private health insurance" versus "not covered by private health insurance."*

3 *Data are from variable defined as "covered by Medicaid" versus "not covered by Medicaid."*

4 *Data are from variable defined as "covered by any form of health insurance" versus "not covered by any form of health insurance."*

Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

Educational Attainment

When comparing children by householder/spouse educational attainment and by race/ethnicity, white children in families in which the householder/spouse did not complete high school are the most likely to report both ADHD/ADD diagnosis and LD diagnosis (**Figure 5 and Figure 6**). Among children in families with this householder/spouse educational attainment, white children are more likely than Hispanic children to have been diagnosed with both ADHD/ADD and LD.

Figure 6 shows the pattern for LD diagnosis by householder/spouse educational attainment. For white children and for black children, diagnosis rates for LD decline as the educational attainment of the householder/spouse increases. Interestingly, there

is relatively little variation in the rates of LD diagnosis for Hispanic children in families regardless of householder/spouse educational attainment. In addition, when families in which the householder/spouse earned a Bachelor's degree (or higher) are compared, black children, Latino children and white children are equally likely to have been diagnosed with a LD. Thus, the influence of educational attainment on the relationships between the frequency of LD diagnosis among children of different racial/ethnic groups should be probed further.

Health Insurance

Cross tabulations by the three variables[5] characterizing health insurance coverage status provide noteworthy findings with respect to both ADHD/ADD diagnosis and LD diagnosis. Underlying these relationships appear to be differences in the ways in which forms of health insurance coverage—i.e., being privately insured versus being covered by the Medicaid program—are associated with their rates of diagnosis for children, regardless of racial/ethnic group. Cross tabulations of the rates of ADHD/ADD and LD diagnosis by health insurance coverage status and race/ethnicity show a similar pattern of differences in rates depending on the form of health insurance by which a child is covered.

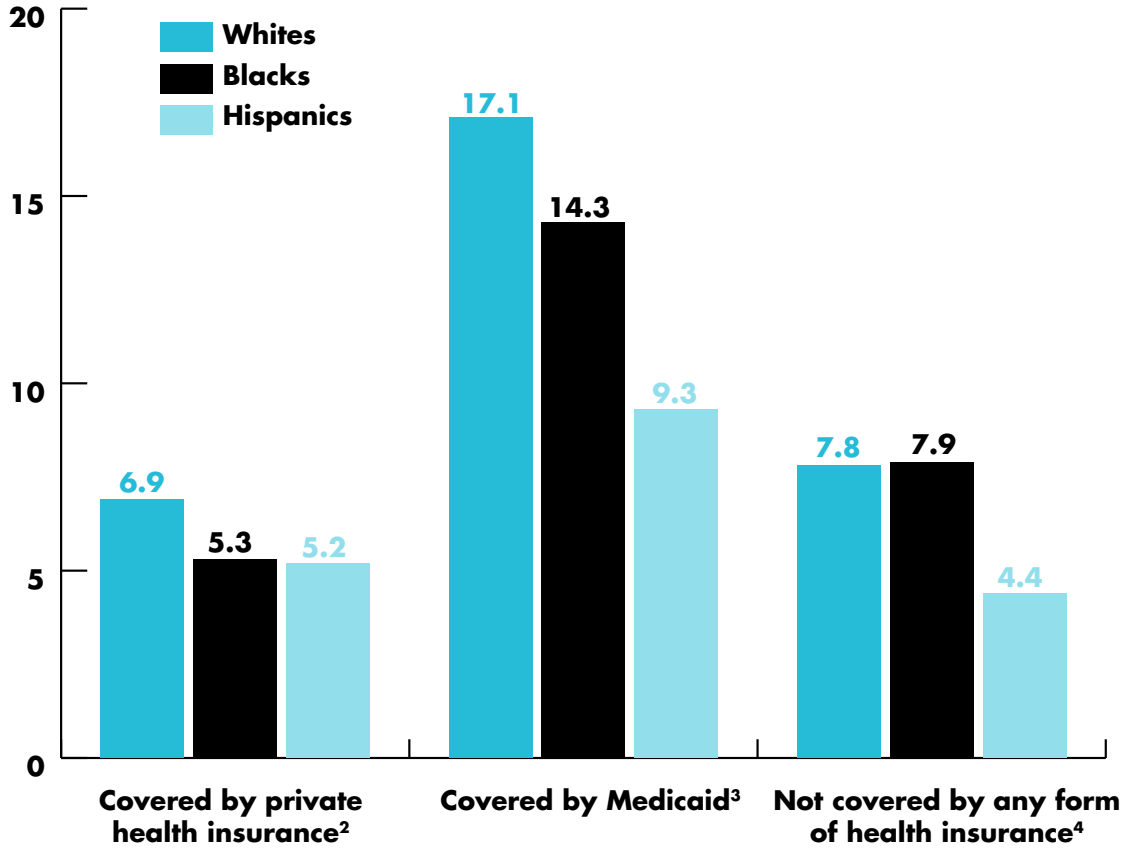
Specifically, children of each racial/ethnic group covered by private health insurance have lower rates of ADHD/ADD diagnosis (6.4 percent of whites, 3.6 percent of blacks and 3.5 percent of Hispanic) than do white children, black children and Hispanic children covered by Medicaid (13.1 percent, 8.7 percent and 4.6 percent, respectively) (**Figure 7**). Similarly, children of each racial/ethnic group covered by Medicaid have higher rates of LD diagnosis than children who are privately insured. While only 6.9 percent of white children who are privately insured were reported to have received a LD diagnosis, 17.1 percent of white children covered by Medicaid had received this diagnosis (**Figure 8**). Among black children, 5.3 percent of those covered by private health insurance had been diagnosed with LD compared to 14.3 percent of those covered by Medicaid. Although the average rates of diagnosis among Hispanic children remain low relative to both black children and white children, there is still a notable difference between the rates of diagnosis for these two forms of health insurance. Among Hispanic children, 5.2 percent who are covered by private insurance had received a LD diagnosis, versus 9.3 percent of children covered by Medicaid.

With respect to ADHD/ADD, Hispanic children are less likely than white children to have received a diagnosis, regardless of health insurance coverage status for each of the three forms considered **(Table 2).** In other words, Hispanic children are less likely than white children to have been diagnosed with ADHD/ADD when comparing children in these six sociodemographic subgroups—i.e., not privately insured, privately insured, not covered by Medicaid, covered by Medicaid, not covered by any form of health insurance and covered by any form of health insurance. This also was true when Hispanic children and white children were compared overall. Hispanic children are less likely than black children to have received an ADHD/ADD diagnosis when comparing children in only two of the insurance sociodemographic subgroups—not privately insured and covered by Medicaid. Black children, in turn, are less likely than white children to have been diagnosed with ADHD/ADD in two different sociodemographic subgroups characterizing health insurance coverage status—privately insured and not covered by Medicaid **(Table 1).**

Exploring the relationship between private health insurance coverage and diagnosis of ADHD/ADD and of LD provides additional noteworthy findings. Among children who are covered by private health insurance, whites are more likely than both

5 This study provides analysis based on data for three different measures of health insurance coverage status—private health insurance, Medicaid and any form of health insurance (which includes both private insurance and Medicaid, as well as any other forms). For each of these three variables, there is a category for children who are covered by that form of health insurance and a residual category for children who are *not* covered by that form of health insurance. Thus, children who are not covered by Medicaid may be uninsured or may be covered by some other form of health insurance. Likewise, children who are not covered by private health insurance may be uninsured or may be covered by some other form of health insurance.

Figure 8
Children ever diagnosed with a learning disability, by health insurance coverage status and by race/ethnicity, 1997-2006 average[1]
(Percent)



1 *Data for "covered by private health insurance" and for "covered by Medicaid" are averaged for the 1997-2006 period. Data for "not covered by any form of health insurance" are averaged for the 1998-2007 period.*

2 *Data are from variable defined as "covered by private health insurance" versus "not covered by private health insurance."*

3 *Data are from variable defined as "covered by Medicaid" versus "not covered by Medicaid."*

4 *Data are from variable defined as "covered by any form of health insurance" versus "not covered by any form of health insurance."*

Source: Joint Center tabulations of data from the National Health Interview Survey (NHIS)

Latino children and black children to have been diagnosed with ADHD/ADD (**Figure 7**). When average rates of LD diagnosis are compared among children who are covered by private health insurance, Latino children and black children are equally likely to have been diagnosed with a LD (**Figure 8**). Thus, while being privately insured is associated with racial/ethnic differences in ADHD/ADD diagnosis, having private health insurance is not associated with racial/ethnic differences in LD diagnosis. Being privately insured (versus not being covered by any form of health insurance) is associated with lower rates of ADHD/ADD and LD diagnosis among white children and black children. Among Hispanic children, however, being privately insured (versus not being covered by any form of health insurance) is associated with higher rates of ADHD/ADD and LD diagnoses (**Figure 7 and Figure 8**).

These relationships highlight the ways in which different forms of health insurance may influence the likelihood of diagnosis among children. The underlying data suggest the need for additional research into whether these differences reflect variations in true prevalence (the frequency of ADHD/ADD and LD among the child population), or variations in diagnostic practices (the assessment of whether children have either ADHD/ADD or LD) for the two forms of health insurance—private insurance and Medicaid. Further research is required to better understand the relationships between health insurance coverage and diagnosis rates for ADHD/ADD and LD.

SYNTHESIS

Among children overall, Hispanic children are less likely than white children to have been diagnosed with ADHD/ADD and are also less likely than white children to have been diagnosed with a LD. Rates of ADHD/ADD diagnosis and LD diagnosis do not differ between blacks and whites, or between blacks and Hispanics. The rates of diagnosis are equal only for black children and white children for LD, however. The relationship between the LD diagnosis rates for black children and Latino children is indeterminate. For ADHD/ADD diagnosis, the relationship between the rates is indeterminate when comparing both black children and white children and black children and Latino children.

When sociodemographics are incorporated into the analysis, in all 23 categories, black children and white children are equally likely to have received a diagnosis of LD. Rates of ADHD/ADD diagnosis, however, differ in only four (of 23) sociodemographic subgroup comparisons, when white children are found more likely than black children (in the same sociodemographic subgroup) to have been diagnosed with ADHD/ADD.

In contrast to the black-white comparisons, Latino-white comparisons of the rates of ADHD/ADD and LD diagnoses reveal a greater number of differences when children are compared by sociodemographics. Hispanic children in a majority of sociodemographic subgroups are less likely than white children to have been diagnosed with ADHD/ADD. Hispanic children in a smaller number (six) of sociodemographic subgroups are less likely than white children to have been diagnosed with a LD, however.

The findings presented in this brief offer several areas in which further research may improve understanding of the racial/ethnic differences in diagnosis of both ADHD/ADD and LD. In particular, the findings about differences by health insurance coverage status suggest that additional analysis is needed to provide a better understanding of the ways health insurance coverage status influences health diagnoses for specific subgroups of children. In particular, the high rates of diagnoses among children covered by Medicaid have implications for black children and Hispanic children who are more likely than white children to be covered by Medicaid or other forms of public insurance.[6]

The uncertainty and controversy surrounding ADHD/ADD and LD diagnoses make it difficult to say that Hispanic children and/or African American children necessarily fare "better" than white children if they are diagnosed less frequently with either condition. Additional research is needed to better understand the ways in which children of color differ from their white peers on these two health indicators.

6 In 2006, 41 percent of black children and 41 percent of Hispanic children were covered by Medicaid or other forms of public health insurance, versus 20 percent of white children (Kaiser Commission on Medicaid and the Uninsured 2007).

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